

Total Maximum Daily Load Information Sheet

Fox River

Water Body Segment at a Glance:

County: Clark
Nearby Cities: Kahoka, Wayland
Length of impaired segment: 27 miles
Pollutant: Bacteria
Source: Rural Nonpoint Sources
Water Body ID: 0038



State Map Showing Location of Watershed

Scheduled for TMDL development: 2014

Description of the Problem

Beneficial uses of Fox River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category B
- Secondary Contact Recreation

Use that is impaired

- Whole Body Contact Recreation – Category B

Standards that apply

- Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the *E.coli* bacteria count shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) for Category A and 206 col/100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31) in waters designated for whole body contact recreation.

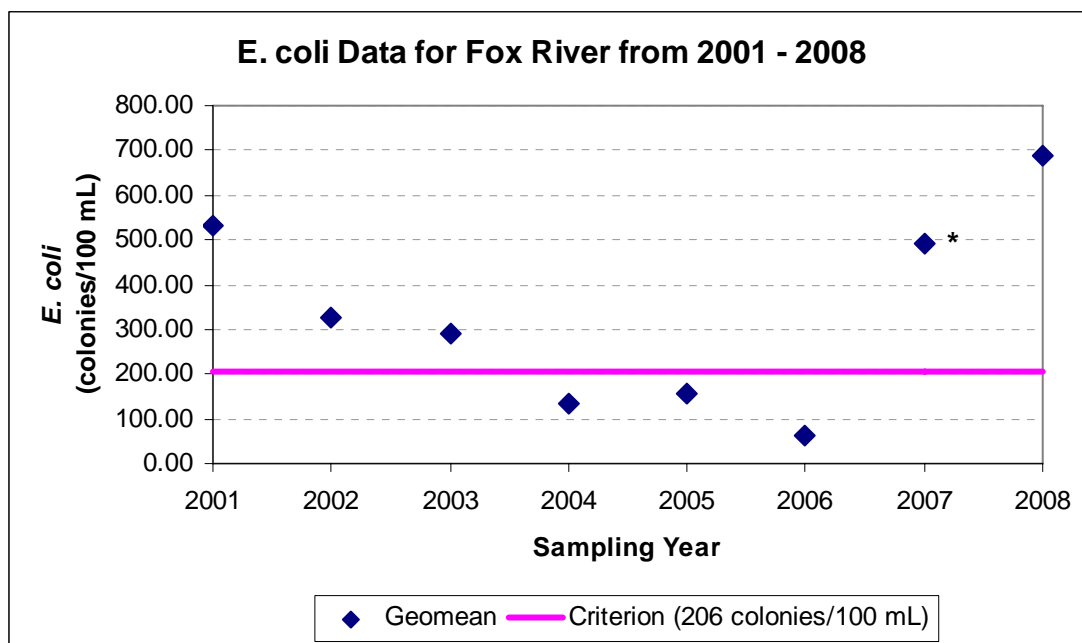
Background information and water quality data

The Fox River is a rural river in northeastern Missouri and flows southeast into the Mississippi River. It is designated as Category B for the whole body contact recreation use, which means it has places deep enough for total immersion (i.e., swimming), but they may be on private lands or inaccessible to the public. Evidence of a bacteria impairment is from data gathered by the U.S. Geological Survey from 2001-08. Only data sets from the previous three years and those that have at least five measurements during the recreational season can be used to determine impairment. In

2007, the recreational season geometric mean for the Fox River exceeded the criteria of 206 col/100 mL for Category B (See figure below).

Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. *E. coli*, are bacteria found in the intestines of warm blooded animals and are used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. The harmless strains are part of the normal flora of the intestines, and can benefit their hosts by preventing the establishment of pathogenic bacteria within the intestine^{1,2}. Missouri's bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The levels of risk correlating to these criteria are no more than eight illnesses per 1,000 swimmers in fresh water.

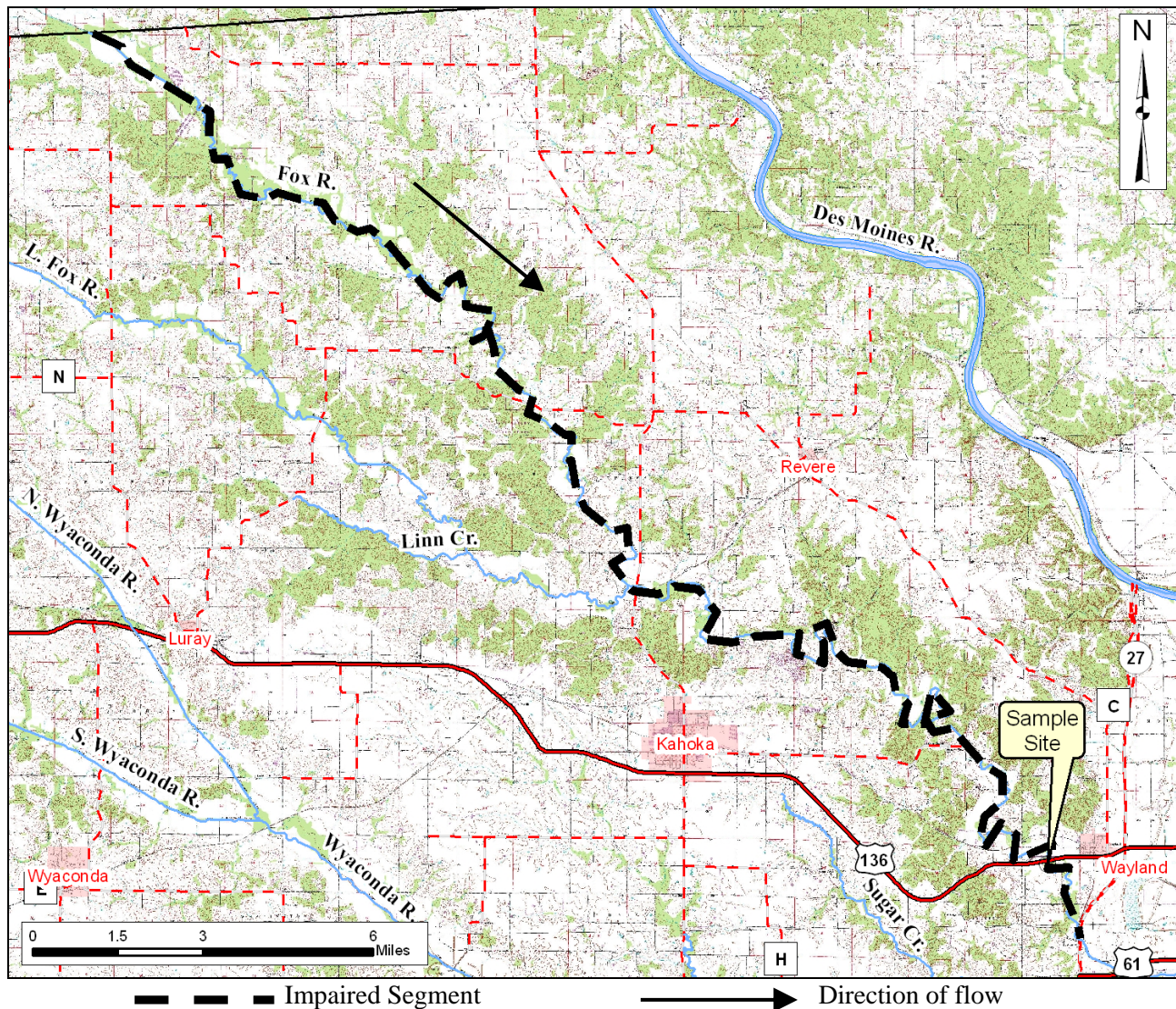
People can protect themselves from waterborne illness by avoiding contact with contaminated water. However, when swimming anywhere, it is wise to take common sense precautions. These include washing hands before eating, showering after swimming and avoiding exposure to questionable water if you have open cuts or wounds.



Map Showing the Fox River in Clark County, Mo., and Sampling Site

¹ Hudault S, Guignot J, Servin AL (July 2001). "[Escherichia coli strains colonising the gastrointestinal tract protect germfree mice against Salmonella typhimurium infection](#)". *Gut* **49** (1): 47–55

² Reid G, Howard J, Gan BS (September 2001). "Can bacterial interference prevent infection?". *Trends Microbiol.* **9** (9): 424–8.



Sample Site
 Fox River at U.S. Highway 136 near Wayland, Mo.

For more information call or write:
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